CALIFORNIA AIR RESOURCES BOARD

SIP COMPLETENESS CHECKLIST
(Electronic Format)

***** TO BE COMPLETED BY DISTRICT AND RETURNED TO ARB *****

All rules submitted to the EPA as State Implementation Plan (SIP) revisions must be supported by certain information and documentation for the rule packages to be deemed complete for review by the EPA. Rules will not be evaluated for approvability by the EPA unless the submittal packages are complete. To assist you in determining that all necessary materials are included in rules packages sent to the ARB for submittal to the EPA, please fill out the following form and include it with the rule package you send ARB. See the ARB's Guidelines on the Implementation of the 40 CFR 51, Appendix V, for a more detailed explanation than is provided here. Adopted rules and rule amendments should be checked against U.S. EPA's Guidance Document for Correcting Common VOC & Other Rule Deficiencies (Little Blue Book, August 21, 2001) to ensure that they contain no elements which will result in disapproval by EPA.

District: Kern County Air Pollution Control District

Rule No: 431

Rule Title: Propellant Combustion and Rocket Testing

Date Adopted or Amended: 03/08/2007

ADMINISTRATIVE MATERIALS

Note: All documents should be in electronic format. Items that have signatures, initials, or stamps may be scanned.

Attached	Not Attached	N/A	
☒	☐	☐	**COMPLETE COPY OF THE RULE:** Provide an unmarked copy of the entire rule as adopted or amended by your District Board.
☒	☐	☐	**UNDERLINE AND STRIKEOUT COPY OF THE RULE**: If an amended rule, provide a complete copy of the rule indicating in underline and strikeout format all language which has been added, deleted, or changed since the rule was last adopted or amended.
☒	☐	☐	**COMPLETE COPY OF THE REFERENCED RULE(S):** For any rule which includes language specifically referencing another rule, a copy of that other rule must also be submitted, unless it has already been submitted to EPA as part of a previous SIP submittal.
☒	☐	☐	**PUBLIC NOTICE EVIDENCE:** Include a copy of the local newspaper clipping certification(s), stating the date of publication, which must be at least 30 days before the hearing. As an alternative, include a copy of the actual published notice of the public hearing as it appeared in the local newspaper(s). In this case, however, enough of the newspaper page must be included to show the date of publication. The notice must specifically identify by title and number each rule adopted or amended.
☒	☐	☐	**RESOLUTION/MINUTE ORDER:** Provide the Board Clerk certified resolution or minute order. This document must include certification that the hearing was held in accordance with the information in the public notice. It must also list the rules that were adopted or amended, the date of the public hearing, and a statement of compliance with California Health and Safety Code Sections 40725-40728 (Administrative Procedures Act).
☒	☐	☐	**PUBLIC COMMENTS AND RESPONSES:** Submit copies of written public comments made during the notice period and at the public hearing. Also submit any written responses prepared by the District staff or presented to the District Board at the public hearing. A summary of the public comments and responses is adequate. If there were no comments made during the notice period or at the hearing, please indicate N/A to the left.

CALIFORNIA AIR RESOURCES BOARD

SIP COMPLETENESS CHECKLIST
(Electronic Format)

TECHNICAL MATERIALS

Attached	Not Attached	N/A	
☒	☐	☐	**RULE EVALUATION FORM:** See instructions for completing the Rule Evaluation Form and the accompanying sample form.
☐	☐	☒	**NON-EPA TEST METHODS:** Attach all test methods that are referenced in your rule that do not appear in 40 CFR 51, 60, 61, 63, or have not been previously submitted to EPA. EPA methods used in other media such as SW846 for solid waste are not automatically approved for air pollution applications. Submittal of test methods that are not EPA-approved should include the information and follow the procedure described in Region 9's "Test Method Review & Evaluation Process."
☐	☐	☒	**MODELING SUPPORT:** Provide if appropriate. In general, modeling support is not required for VOC and NOx rules to determine their impacts on ozone levels. Modeling is required where a rule is a relaxation that affects large sources ($\geq$ 100 TPY) in an attainment area for SO2, directly emitted PM10, CO, or NOx (for NO2 purposes). In cases where EPA is concerned with the impact on air quality of rule revisions which relax limits or cause a shift in emission patterns in a nonattainment area, a reference back to the approved SIP will be sufficient provided the approved SIP accounts for the relaxation and provided the approved SIP used the current EPA modeling guidelines. If current EPA modeling guidelines were not used, then new modeling may be required.
☐	☐	☒	**ECONOMIC AND TECHNICAL JUSTIFICATION FOR DEVIATIONS FROM EPA POLICIES**: The District staff report or other information included with the submittal should discuss all potential relaxations or deviations from RACT, RACM, BACT, BACM, enforceability, attainment, RFP, or other relevant EPA requirements. This includes, for example, demonstrating that exemptions or emission limits less stringent than the presumptive RACT (e.g., a CTG) meet EPA's 5 percent policy, and demonstrating that all source categories exempted from a RACM/BACM rule are de minimus according to EPA's RACM/BACM policy.
☒	☐	☐	**ADDITIONAL MATERIALS**: Provide District staff reports and any other supporting information concerning development of the rule or rule changes. This information should explain the basis for all limits and thresholds contained in the rule.

CALIFORNIA AIR RESOURCES BOARD

APCD/AQMD RULE EVALUATION FORM -- Page 1

(Electronic Format)

I. GENERAL INFORMATION

District: Kern County Air Polluton Control District

Rule No(s): 431 Date adopted/Amended/Rescinded: 3/8/2007

Rule Title(s): Propellant Combustion and Rocket Testing

Date Submitted to ARB: 08/14/2006

If an Amended Rule, Date Last Amended (or Adopted): _____

Is the Rule Intended to be Sent to the U.S. EPA as a SIP Revision? ☒ Yes ☐ No *(If No, do not complete remainder of form)*

District Contact: Glen Stephens Phone Number: 661-862-8551 E-mail Address: glens@co.kern.ca.us

Narrative Summary of New Rule or Rule Changes: ☒ New Rule ☐ Amended Rule

Rule 431 (Propellant Combustion and Rocket Testing) sets forth standards for propellant combustion and rocket testing operations to best mitigate and minimize particulate matter and toxic effects on the environment community at large.

Pollutant(s) Regulated by the Rule (Check): ☐ ROG ☐ (NOx) ☐ SO2 ☐ (CO) ☒ PM ☒ TAC (name):_____

II. EFFECT ON EMISSIONS

Complete this section ONLY for rules that, when implemented, will result in quantifiable changes in emissions. Attach reference(s) for emission factor(s) and other information. Attach calculation sheet showing how the emission information provided below was determined.

Net Effect on Emissions: ☐ Increase ☐ Decrease ☒ N/A

Emission Reduction Commitment in SIP for this Source Category: _____

Inventory Year Used to Calculate Changes in Emissions: _____ Area Affected: _____

Future Year Control Profile Estimate *(Provide information on as many years as possible)*:

_____

Baseline Inventory in the SIP for the Control Measure: _____

Emissions Reduction Commitment in the SIP for the Control Measure: _____

Revised Baseline Inventory (if any): _____

Revised Emission Reduction Estimate (if developed): _____

Note that the district's input to the Rule Evaluation Form will not be used as input to the ARB's emission forecasting and planning.

III. SOURCES/ATTAINMENT STATUS

District is: ☐ Attainment ☐ Nonattainment ☒ Split

Approximate Total Number of Small (<100 TPY) Sources Affected by this Amendment: 10

Percent in Nonattainment Area: 100%

Number of Large (≥ 100 TPY) Sources Controlled: 2 Percent in Nonattainment Area: 100%

Name(s) and Location(s) (city and county) of Large (≥ 100 TPY) Sources Controlled by Rule *(Attach additional sheets as necessary)*: Edwards Air Force Base (Edwards, Kern County) and Naval Air Weapons Station (China Lake, Kern County)

IV. EMISSION REDUCTION TECHNOLOGY

Does the Rule Include Emission Limits that are Continuous? ☐ Yes ☒ No

If Yes, Those Limits are in Section(s) _____ of the Rule.

Other Methods in the Rule for Achieving Emission Reductions are: _____

V. OTHER REQUIREMENTS

The Rule Contains:

Emission Limits in Section(s): _____ Work Practice Standards in Section(s): Section IV
Recordkeeping Requirements in Section(s): Section VI Reporting Requirements in Section(s): Section VI

APCD/AQMD RULE EVALUATION FORM -- Page 3
(Electronic Format)

VI. IMPACT ON AIR QUALITY PLAN

☒ No Impact ☐ Impacts RFP ☐ Impacts attainment

Discussion: New rule 431 (Propellant Combustion and Rocket Testing) sets forth standards for propellant combustion and rocket testing operations to best mitigate effects of propellant combustion and rocket testing.

SUMMARY OF PROCEEDINGS

BOARD OF DIRECTORS
KERN COUNTY AIR POLLUTION CONTROL DISTRICT

Location: Ridgecrest City Hall
100 W California Ave
Ridgecrest, CA 93555

Regular Meeting
Thursday, March 8, 2007

2:00 P.M.

DISTRICT RECONVENED

DIRECTORS: McQuiston (Chairman), Maben (Vice Chairman), Watson, Holloway and Schafer
ROLL CALL: Director McQuiston and Director Watson Absent

SALUTE TO FLAG: Led by Director Holloway

Air Pollution Control Officer: David L. Jones
Clerk of the Board: Debra Goddard
District Counsel: Kirk Perkins

BOARD ACTION SHOWN AFTER EACH ITEM IN CAPS. NOTE: The vote is placed in **bold** below each item. For example, **Holloway - Hand** denotes Director Holloway made the motion and Director Hand seconded the motion.

CONSENT AGENDA/OPPORTUNITY FOR PUBLIC COMMENT: all items listed with a (-CA) are consent items and considered routine and noncontroversial by district staff and were approved by one motion - ITEMS: 4, 6, 7, 8 AND 10 WERE VOTED AS CONSENT ITEMS. ITEMS 5 & 9 WERE REMOVED FROM CONSENT AGENDA BY DIRECTOR KEVIN SCHAFER.
Holloway - Schafer : 3 Ayes; 2 Absent - McQuiston and Watson

PUBLIC PRESENTATIONS

1) This portion of the meeting is reserved for persons to address the Board on any matter not on this agenda but under jurisdiction of the Board. Board members may respond briefly to statements made or questions posed. They may ask questions for clarification; make referrals to staff for information or request staff to report to the Board at a later meeting. In addition, the Board may take action to direct staff to place a matter of business on a future agenda - NO ONE HEARD.

BOARD MEMBER PRESENTATIONS OR ANNOUNCEMENTS

2) On their own initiative, Board members may make brief announcements or brief reports on their own activities. They may ask questions for clarification, make referrals to staff or take action to have staff place a matter of business on a future agenda [Gov. Code Sec. 54954.2(a)] - NO ONE HEARD.

HEARINGS

3) Hearing to Consider Amendments to Rule 431 (Propellant Combustion and Rocket Testing) - OPENED HEARING; RECEIVED PUBLIC COMMENT; CLOSED HEARING; AND APPROVED RESOLUTION #2007-003-03 ADOPTING AMENDMENTS TO RULE 431 (PROPELLANT COMBUSTION AND ROCKET TESTING).
Holloway - Schafer: 3 Ayes; 2 Absent - McQuiston and Watson

DISTRICT REQUESTS

4-CA) Air Toxics, Hot Spots Information and Assessment Act Program (AB-2588) Costs for Fiscal 2006-2007 - AUTHORIZED STAFF TO COLLECT FROM AFFECTED SOURCES AIR TOXICS, HOT SPOTS INFORMATION AND ASSESSMENT ACT PROGRAM (AB-2588) ARB COSTS FOR FISCAL 2006-2007 AND FORWARD TO ARB.
Holloway - Schafer: 3 Ayes; 2 Absent - McQuiston and Watson

5) Air Toxic Program (AB2588) "Area Source" ARB Fees for Fiscal 2006-2007 - DIRECTED STAFF NOT TO PAY AIR TOXIC PROGRAM (AB2588) "AREA SOURCE" FEES FOR FISCAL 2006-2007 OF $350 AND DIRECTED STAFF TO COLLECT FROM 10 SOURCES THE $35 AIR TOXIC PROGRAM (AB2588) ARB FEES FOR FISCAL 2006-2007 AND FORWARD TO ARB.
Schafer - Holloway: 3 Ayes; 2 Absent - McQuiston and Watson

6-CA) Proposed Amendment No. 1 to Agreement No. 09-030-2006 with 2B Trucking LLC for a Modification of a Carl Moyer Project - APPROVED AND AUTHORIZED VICE CHAIR TO SIGN AMENDMENT.
Holloway - Schafer: 3 Ayes; 2 Absent - McQuiston and Watson

MATTERS FOR EXECUTIVE APPROVAL

7-CA) Approve 12 month rotating Schedule of KCAPCD Governing Board Meetings - APPROVED AND FILED.
Holloway - Schafer: 3 Ayes; 2 Absent - McQuiston and Watson

8-CA) Summary of Proceedings for Meeting of January 24, 2007 - APPROVED AND FILED.
Holloway - Schafer: 3 Ayes; 2 Absent - McQuiston and Watson

DOCUMENTS FOR FILING

9) Update of District's Notice of Violations - DIRECTOR SCHAFER ASKED QUESTIONS; DAVID JONES, APCO, RESPONDED. RECEIVED AND FILED.
Holloway - Schafer: 3 Ayes; 2 Absent - McQuiston and Watson

10-CA) Addendum to the Final Environmental Impact Report for the National Cement Company of California, Inc. Tire-Derived Fuel Project - RECEIVED AND FILED, SET PUBLIC HEARING FOR THE NEXT BOARD OF DIRECTOR'S MEETING ON MAY 10, 2007.
Holloway - Schafer: 3 Ayes; 2 Absent - McQuiston and Watson

DISTRICT UPDATES

11) APCO Report (verbal)
A) Motor Vehicle Emission Reduction Program update
B) Clean Energy LNG, LLC Authority to Construct
C) Program Rail Authority to Construct update
D) National Cement Addendum to the Final EIR

ADJOURNED TO CLOSED SESSION

CLOSED SESSION

12) Request for Closed Session regarding conference with designated labor negotiators, Susan Wells, Deputy County Administrative Officer (Government Code Section 54957.6).

ADJOURNED TO THURSDAY, May 10, 2007 - 2:00 p.m.

NEXT MEETING

May 10, 2007 - 2:00 p.m., Rosamond Community Services District
3179 35th Street - West, Rosamond, CA

Debra Goddard
Clerk of the Board

(*District Seal*)

Jon McQuiston
Chairman

###

Americans with Disabilities Act
(Government Code Section 54953.2)

Disabled individuals who need special assistance to attend or participate in a meeting of the Kern County Air Pollution Control District, may request assistance at the Kern County Air Pollution Control District - 2700 "M" Street Suite 302 - Bakersfield, CA 93301 or by calling 661-862-5250. Every effort will be made to reasonably accommodate individuals with disabilities by making meeting materials available in alternative formats. Requests for assistance should be made at least five (5) working days in advance, whenever possible.

BEFORE THE AIR POLLUTION CONTROL BOARD
KERN COUNTY AIR POLLUTION CONTROL DISTRICT

In the matter of:
AMENDMENTS TO RULES AND REGULATIONS OF THE KERN COUNTY AIR POLLUTION CONTROL DISTRICT; TO WIT: RULE 431 (PROPELLANT COMBUSTION AND ROCKET TESTING)

Resolution No. 2007-003-03
Reference No. Item 3

I, Debra Goddard, Clerk of the Board of Directors of the KERN COUNTY AIR POLLUTION CONTROL DISTRICT, hereby certify that the following Resolution, proposed by Director Holloway and seconded by Director Schafer, was duly passed and adopted by said Board Directors at an official meeting thereof on the 8th day of March, 2007.

AYES: 3

NOES: 0

ABSENT: 2; Director McQuiston and Director Watson

(District Seal)

DEBRA GODDARD
Clerk of the Board of the Kern County Air Pollution Control District Board of Directors

By Debra Goddard

STATE OF CALIFORNIA
KERN COUNTY AIR POLLUTION CONTROL DISTRICT
I, Debra Goddard, Clerk of the Board of Directors do hereby certify the foregoing to be a full, true and correct copy of the original Resolution # 2007-003-03 on file in my office.
Witness my hand and seal of the Board of Directors.
This 8th day of March 20 07
(Seal)
DEBRA GODDARD
Clerk of the Board of Directors
By Debra Goddard Clerk

BEFORE THE AIR POLLUTION CONTROL BOARD
KERN COUNTY AIR POLLUTION CONTROL DISTRICT

In the matter of:)
)
AMENDMENTS TO RULES AND)
REGULATIONS OF THE KERN)
COUNTY AIR POLLUTION)
CONTROL DISTRICT; TO WIT: RULE)
431 (PROPELLANTCOMBUSTION)
AND ROCKET TESTING))

Resolution No. 2007-003-03
Reference No. Item 3

RESOLUTION

Section 1. WHEREAS:

(a) The Kern County Air Pollution Control District (District) is authorized by Health and Safety Code section 40702 to make and enforce all necessary and proper orders, rules and regulations to accomplish the purposes of Division 26 of the Health and Safety; and

(b) The Air Pollution Control Officer for said District has recommended that the Board of Directors of the Kern County Air Pollution Control District (Board) consider adopting certain amendments to the Rules and Regulations of the District; and

(c) A notice of a public hearing on March 8, 2007, at the hour of 2:00 p.m. at the City of Ridgecrest City Hall, 100 W. California Ave., Ridgecrest, California, to consider the amendments to Rule 431, was duly given; and

(d) The matter was heard at the time and place so specified, evidence was received and all persons desiring to be heard in said matter were given an opportunity to be heard;

Section 2. NOW, THEREFORE, IT IS RESOLVED by the Board as follows:

1. This Board does hereby revise the Rules and Regulations of the District as set forth in Exhibit "A" attached hereto and incorporated herein by this reference. The foregoing referenced Rules and Regulations attached hereto as Exhibit "A" are hereby adopted as amendments to the Rules and Regulations of the District with said amendments to be effective March 8, 2007.

2. The findings of this Board, based on the evidence submitted at the hearing upon which its decision is based, are as follows:

a. The proposed revisions to the Rules and Regulations will amend Rule 431 (Propellant Combustion and Rocket Testing) add exemptions for combustion of propane and liquid oxygen (LOX) and methane and LOX; and

b. All notices required to be given by law have been duly given in accordance with Health and Safety Code section 40725, and the Board has allowed public comment, both oral and written, in accordance with Health and Safety Code section 40726; and

c. The written analysis required by Health and Safety Code section 40727.2, which identifies all existing federal air pollution control requirements that apply to the same equipment or source type as the rule proposed for adoption or modification, and also identifies any of the District's existing or proposed rules that apply to the same equipment or source type, was prepared by the District. A copy of the analysis was made available to the public from the District.

3. Further findings of this Board as required by Health and Safety Code Section 40727 are as follows:

a. Necessity: The proposed amendments are necessary to accomplish the purposes of Division 26 of the Health and Safety Code and to comply with state and/or federal Clean Air Act requirements;

b. Authority: The Board is authorized to adopt and amend rules and regulations as may be necessary or proper to execute the powers and duties granted to, and imposed upon, the District by Health and Safety Code section 40702;

c. Clarity: The Board has reviewed the proposed revisions and has determined that the said provisions are set forth in clear and concise language so that their meaning can be easily understood by the persons directly affected by them;

d. Consistency: The proposed revisions are in harmony with, and not in conflict with or contradictory to, existing District Rules and Regulations, statutes, court decisions, or state or federal regulations;

e. Nonduplication: The proposed revisions do not impose the same requirements as an existing state or federal regulation; and

f. Reference: The amended Rules and Regulations are being implemented in compliance with Health and Safety Code section 40001 which requires the District to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards in all areas affected by emissions sources under its jurisdiction, and enforce all applicable provisions of state and federal law.

4. This Board finds, based on the staff report filed with this Board and the record of its rule adoption hearing, and pursuant to sections 40703 and 40922 of the Health and Safety Code, that the Rules and Regulations contained in Exhibit "A" are the most cost effective of the available control measures considered by this Board.

5. This Board finds that the proposed action to add Rule 431 (Propellant Combustion and Rocket Testing) to the District Rules and Regulations is exempt from the Environmental Quality Act of 1970 (CEQA) as a regulatory action under the provisions of Section 15308 of the State CEQA Guidelines.

6. The Secretary of this Board, if requested, shall cause a Notice of Exemption to be filed with the County Clerk and a copy to be filed with the State Office of Planning and Research, either electronically at state.clearinghouse@opr.ca.gov or by regular mail at State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044.

7. The District shall maintain a record of this rule-making proceeding in accordance with Health and Safety Code section 40728.

8. The Secretary of this Board is hereby directed, for the purposes of conforming to Section 40704 of the Health and Safety Code, shall cause a certified copy of this Resolution, together with the Rules and Regulations adopted herein, to be filed with the California Air Resources Board.

9. The Secretary of this Board is further directed to cause a certified copy of this Resolution to be forwarded to the Air Pollution Control Officer of said District and to the County Counsel of Kern County.

10. The Air Pollution Control Officer is hereby authorized and directed to submit Rule 431 and this resolution as a revision to the State Implementation Plan, in the form required by the California Air Resources Board and the United States Environmental Protection Agency, on behalf of the Kern County Air Pollution Control District.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

Rule 431 Propellant Combustion and Rocket Testing – Adopted 01/24/2007, Amended 03/08/07.

I. Applicability

Rule 431 shall apply to open-air rocket propellant combustion operations conducted on rocket test stands.

II. Definitions

A. Hybrid Rocket Motor - Rocket type where prior to ignition the oxidizer may be either a liquid or a gas. The solid fuel typically consists of a polymeric rubber grain with a center perforation. The liquid or gas oxidizers are typically supplied to the solid fuel grain via a fuel injection system.
B. Permissible Burn Day - Days designated as permissible burn days by the California Air Resources Board (ARB) based on the meteorological criteria for the Mojave Desert Air Basin at section 80311 of Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.
C. Permitted Test Stand - Any rocket test stand with a valid permit to operate issued by the Kern County Air Pollution Control District (District).
D. Receptor - The closest downwind person not associated with testing or the property fence line, whichever is closest.
E. Rocket - A device consisting of a combustion chamber in which materials referred to as propellants, providing both fuel and oxidizer for combustion, are burned. Products of combustion escape through the nozzle, providing thrust.
F. Rocket Engine - Rocket type where prior to ignition the propellants may be in either in a liquid or gaseous state and are typically supplied via a fuel injection system.
G. Rocket Test Plan - Document specifying designated testing conditions and information as described in Section V.
H. Rocket Test Stand - Any open-air ground-based structure used for testing of rocket propellant combustion or apparatus
I. Solid Rocket Motor - Rocket type where prior to ignition the propellants are in a solid state.

III. Exemptions

The provisions of this Rule shall not apply to:

A. Rocket propellant combustion during rocket test stand operations with a total consumed or combusted propellant mass of 75 lbs. or less.
B. Emergency destruction/disposal of propellant by qualified bomb squad or explosive ordinance disposal groups
C. Combustion of rocket propellants outside of the rocket body for purposes of fire training or for purposes of disposal by combustion under an approved burn plan.
D. Rocket propulsion systems that do not require the combustion of propellants for operation.
E. Rocket propellants comprised primarily of liquid fuels as approved by the District Air Pollution Control Officer (APCO). Exempt liquid fuels include, but not limited to the following:
    1. RP-1 (kerosene) and liquid oxygen (LOX),
    2. Liquid hydrogen and LOX,
    3. Isopropyl alcohol (IPA) and LOX,
    4. Propane and LOX,
    5. Methane and LOX, and
    6. Nitrogen tetroxide and hydrazine.

IV. General Requirements

A. Without a Rocket Test Plan - Combustion of rocket propellants at a permitted rocket test stand may be conducted without a Rocket Test Plan, if conditions in Sections IV.A.1 and IV.A.2 are met.
   1. Rocket propellant mass must be less than or equal to 500 lbs. for a solid rocket motor or hybrid rocket motor, and less than or equal to 1000 lbs. for a rocket engine.
   2. The ARB has designated the day as a permissible burn day.

B. Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.

C. With a Rocket Test Plan - Combustion of rocket propellants at a permitted test stand may be conducted when there is an APCO approved Rocket Test Plan, if the meteorological conditions in the approved Rocket Test Plan are met, as required in Section V.

V. Rocket Test Plan

The rocket test stand operator shall submit a rocket testing plan to the District every two years for rocket test stand operations, where any individual solid rocket motor or hybrid rocket exceeds a mass of 500 lbs. of propellant, or for any rocket engine that exceeds a mass of 1000 lbs. of propellant. Rocket testing plans must contain, at a minimum, the following information (V.H, V.I, V.J, and V.K are not required if facility has an approved AB2588 Plan):

A. Company name and project name (program name);
B. Identification of responsible personnel, including telephone contacts;
C. Detailed description of testing area including location of test stand(s), size of test area (acres) and plot plan of the site;
D. Maximum number of each rocket type (solid, liquid or hybrid) and amount of propellants to be used each year of the plan;
E. Air quality impact analysis for the rocket with the maximum particulate matter emissions expected to be tested on the test stand(s);
F. Description of monitoring to be conducted during testing; and
G. Description of the minimum record keeping and reporting to be conducted.
H. Identification and location to nearest receptor downwind of the test stand;
I. Toxic risk analysis conducted on the highest yearly estimated toxic emissions to be tested on test stand(s);
J. Identification of those meteorological conditions under which propellant testing will cause insignificant risk to the nearest receptor;
K. Identification meteorological conditions that were used in the toxic risk an analysis;

VI. Recordkeeping Requirements

Owner or Operator of rocket motor, solid rocket propellant, or any equipment subject to this rule shall maintain records specified in Section VI.A and VI.B for at least five years and shall make those records available to the District upon request.

A. Without a Rocket Test Plan –
   Documentation for all rocket propellant combustion tests subject to Section IV.A shall be kept on-site or at the operator's nearest place of business and shall include the following:
   1. Net mass and type of propellant burned
   2. Wind Direction and Speed
   3. Date and time of test or combustion
   4. Location of test or combustion

B. With a Rocket Test Plan –

Documentation for all rocket propellant combustion tests shall be kept on-site or at the operator's nearest place of business specified in the Rocket Testing Plan and shall include the following:

1. Net mass and type of propellant burned
2. Wind Direction and Speed
3. Date and time of test or combustion
4. Location of test or combustion

VII. Compliance Schedule

A. New Sources

1. Owners or Operators of any rocket test stand capable and intending to test rockets with a propellant mass of 75 lbs or greater and without a valid Permit to Operate (PTO) or an Authority to Construct (ATC) shall apply for an ATC within 90 days from the adoption of this Rule.
2. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule.
3. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District during initial permitting of the rocket test stand. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.

B. Existing Sources

1. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule within 90 days of rule promulgation.
2. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District within 180 days of rule promulgation. The Rocket Test Plan shall be in effect from the date of approval by the APCO. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.
3. Owners or operators with valid PTO(s) shall, within 90 days of rule promulgation, notify the District in writing of PTO(s) subject to this rule.
4. Owners or operators with valid ATC(s) or ATC applications in process shall, within 30 days of rule promulgation, notify the District in writing of ATC(s) or ATC applications subject to this rule.

###

Strike-Out/Underline Version of Rule 431

Rule 431 Propellant Combustion and Rocket Testing – Adopted 01/24/2007, Amended XX/XX/2007

I. Applicability

Rule 431 shall apply to open-air rocket propellant combustion operations conducted on rocket test stands.

II. Definitions

A. Hybrid Rocket Motor - Rocket type where prior to ignition the oxidizer may be either a liquid or a gas. The solid fuel typically consists of a polymeric rubber grain with a center perforation. The liquid or gas oxidizers are typically supplied to the solid fuel grain via a fuel injection system.

B. Permissible Burn Day - Days designated as permissible burn days by the California Air Resources Board (ARB) based on the meteorological criteria for the Mojave Desert Air Basin at section 80311 of Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.

C. Permitted Test Stand - Any rocket test stand with a valid permit to operate issued by the Kern County Air Pollution Control District (District).

D. Receptor - The closest downwind person not associated with testing or the property fence line, whichever is closest.

E. Rocket - A device consisting of a combustion chamber in which materials referred to as propellants, providing both fuel and oxidizer for combustion, are burned. Products of combustion escape through the nozzle, providing thrust.

F. Rocket Engine - Rocket type where prior to ignition the propellants may be in either in a liquid or gaseous state and are typically supplied via a fuel injection system.

G. Rocket Test Plan - Document specifying designated testing conditions and information as described in Section V.

H. Rocket Test Stand - Any open-air ground-based structure used for testing of rocket propellant combustion or apparatus

I. Solid Rocket Motor - Rocket type where prior to ignition the propellants are in a solid state.

III. Exemptions

The provisions of this Rule shall not apply to:

A. Rocket propellant combustion during rocket test stand operations with a total consumed or combusted propellant mass of 75 lbs. or less.

B. Emergency destruction/disposal of propellant by qualified bomb squad or explosive ordinance disposal groups

C. Combustion of rocket propellants outside of the rocket body for purposes of fire training or for purposes of disposal by combustion under an approved burn plan.

D. Rocket propulsion systems that do not require the combustion of propellants for operation.

E. Rocket propellants comprised primarily of liquid fuels as approved by the District Air Pollution Control Officer (APCO). Exempt liquid fuels include, but not limited to the following:

1.) RP-1 (kerosene) and liquid oxygen (LOX),
2.) Liquid hydrogen and LOX,
3.) Isopropyl alcohol (IPA) and LOX, ~~and~~
4.) Propane and LOX,
5.) Methane and LOX, and
6.) Nitrogen tetroxide and hydrazine.

IV. General Requirements

A. Without a Rocket Test Plan - Combustion of rocket propellants at a permitted rocket test stand may be conducted without a Rocket Test Plan, if conditions in Sections IV.A.1 and IV.A.2 are met.
   1. Rocket propellant mass must be less than or equal to 500 lbs. for a solid rocket motor or hybrid rocket motor, and less than or equal to 1000 lbs. for a rocket engine.
   2. The ARB has designated the day as a permissible burn day.

B. Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.

C. With a Rocket Test Plan - Combustion of rocket propellants at a permitted test stand may be conducted when there is an APCO approved Rocket Test Plan, if the meteorological conditions in the approved Rocket Test Plan are met, as required in Section V.

V. Rocket Test Plan

The rocket test stand operator shall submit a rocket testing plan to the District every two years for rocket test stand operations, where any individual solid rocket motor or hybrid rocket exceeds a mass of 500 lbs. of propellant, or for any rocket engine that exceeds a mass of 1000 lbs. of propellant. Rocket testing plans must contain, at a minimum, the following information (V.H, V.I, V.J, and V.K are not required if facility has an approved AB2588 Plan):

A. Company name and project name (program name);
B. Identification of responsible personnel, including telephone contacts;
C. Detailed description of testing area including location of test stand(s), size of test area (acres) and plot plan of the site;
D. Maximum number of each rocket type (solid, liquid or hybrid) and amount of propellants to be used each year of the plan;
E. Air quality impact analysis for the rocket with the maximum particulate matter emissions expected to be tested on the test stand(s);
F. Description of monitoring to be conducted during testing; and
G. Description of the minimum record keeping and reporting to be conducted.
H. Identification and location to nearest receptor downwind of the test stand;
I. Toxic risk analysis conducted on the highest yearly estimated toxic emissions to be tested on test stand(s);
J. Identification of those meteorological conditions under which propellant testing will cause insignificant risk to the nearest receptor;
K. Identification meteorological conditions that were used in the toxic risk an analysis;

VI. Recordkeeping Requirements

Owner or Operator of rocket motor, solid rocket propellant, or any equipment subject to this rule shall maintain records specified in Section VI.A and VI.B for at least five years and shall make those records available to the District upon request.

A. Without a Rocket Test Plan –
Documentation for all rocket propellant combustion tests subject to Section IV.A shall be kept on-site or at the operator's nearest place of business and shall include the following:
1a. Net mass and type of propellant burned
2b. Wind Direction and Speed
3c. Date and time of test or combustion
4d. Location of test or combustion

B. With a Rocket Test Plan –
Documentation for all rocket propellant combustion tests shall be kept on-site or at the operator's nearest place of business specified in the Rocket Testing Plan and shall include the following:
1a. Net mass and type of propellant burned
2b. Wind Direction and Speed
3c. Date and time of test or combustion
4d. Location of test or combustion

VII. Compliance Schedule

A. New Sources

1. Owners or Operators of any rocket test stand capable and intending to test rockets with a propellant mass of 75 lbs or greater and without a valid Permit to Operate (PTO) or an Authority to Construct (ATC) shall apply for an ATC within 90 days from the adoption of this Rule.
2. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule.
3. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District during initial permitting of the rocket test stand. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.

B. Existing Sources

1. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule within 90 days of rule promulgation.
2. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District within 180 days of rule promulgation. The Rocket Test Plan shall be in effect from the date of approval by the APCO. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.
3. Owners or operators with valid PTO(s) shall, within 90 days of rule promulgation, notify the District in writing of PTO(s) subject to this rule.
4. Owners or operators with valid ATC(s) or ATC applications in process shall, within 30 days of rule promulgation, notify the District in writing of ATC(s) or ATC applications subject to this rule.

Rule 431 Propellant Combustion and Rocket Testing – Adopted 01/24/2007, Amended 03/08/07

I. Applicability

Rule 431 shall apply to open-air rocket propellant combustion operations conducted on rocket test stands.

II. Definitions

A. Hybrid Rocket Motor - Rocket type where prior to ignition the oxidizer may be either a liquid or a gas. The solid fuel typically consists of a polymeric rubber grain with a center perforation. The liquid or gas oxidizers are typically supplied to the solid fuel grain via a fuel injection system.
B. Permissible Burn Day - Days designated as permissible burn days by the California Air Resources Board (ARB) based on the meteorological criteria for the Mojave Desert Air Basin at section 80311 of Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.
C. Permitted Test Stand - Any rocket test stand with a valid permit to operate issued by the Kern County Air Pollution Control District (District).
D. Receptor - The closest downwind person not associated with testing or the property fence line, whichever is closest.
E. Rocket - A device consisting of a combustion chamber in which materials referred to as propellants, providing both fuel and oxidizer for combustion, are burned. Products of combustion escape through the nozzle, providing thrust.
F. Rocket Engine - Rocket type where prior to ignition the propellants may be in either in a liquid or gaseous state and are typically supplied via a fuel injection system.
G. Rocket Test Plan - Document specifying designated testing conditions and information as described in Section V.
H. Rocket Test Stand - Any open-air ground-based structure used for testing of rocket propellant combustion or apparatus
I. Solid Rocket Motor - Rocket type where prior to ignition the propellants are in a solid state.

III. Exemptions

The provisions of this Rule shall not apply to:

A. Rocket propellant combustion during rocket test stand operations with a total consumed or combusted propellant mass of 75 lbs. or less.
B. Emergency destruction/disposal of propellant by qualified bomb squad or explosive ordinance disposal groups
C. Combustion of rocket propellants outside of the rocket body for purposes of fire training or for purposes of disposal by combustion under an approved burn plan.
D. Rocket propulsion systems that do not require the combustion of propellants for operation.
E. Rocket propellants comprised primarily of liquid fuels as approved by the District Air Pollution Control Officer (APCO). Exempt liquid fuels include, but not limited to the following:
    1. RP-1 (kerosene) and liquid oxygen (LOX),
    2. Liquid hydrogen and LOX,
    3. Isopropyl alcohol (IPA) and LOX,
    4. Propane and LOX,
    5. Methane and LOX, and
    6. Nitrogen tetroxide and hydrazine.

IV. General Requirements

A. Without a Rocket Test Plan - Combustion of rocket propellants at a permitted rocket test stand may be conducted without a Rocket Test Plan, if conditions in Sections IV.A.1 and IV.A.2 are met.
   1. Rocket propellant mass must be less than or equal to 500 lbs. for a solid rocket motor or hybrid rocket motor, and less than or equal to 1000 lbs. for a rocket engine.
   2. The ARB has designated the day as a permissible burn day.

B. Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.

C. With a Rocket Test Plan - Combustion of rocket propellants at a permitted test stand may be conducted when there is an APCO approved Rocket Test Plan, if the meteorological conditions in the approved Rocket Test Plan are met, as required in Section V.

V. Rocket Test Plan

The rocket test stand operator shall submit a rocket testing plan to the District every two years for rocket test stand operations, where any individual solid rocket motor or hybrid rocket exceeds a mass of 500 lbs. of propellant, or for any rocket engine that exceeds a mass of 1000 lbs. of propellant. Rocket testing plans must contain, at a minimum, the following information (V.H, V.I, V.J, and V.K are not required if facility has an approved AB2588 Plan):

A. Company name and project name (program name);
B. Identification of responsible personnel, including telephone contacts;
C. Detailed description of testing area including location of test stand(s), size of test area (acres) and plot plan of the site;
D. Maximum number of each rocket type (solid, liquid or hybrid) and amount of propellants to be used each year of the plan;
E. Air quality impact analysis for the rocket with the maximum particulate matter emissions expected to be tested on the test stand(s);
F. Description of monitoring to be conducted during testing; and
G. Description of the minimum record keeping and reporting to be conducted.
H. Identification and location to nearest receptor downwind of the test stand;
I. Toxic risk analysis conducted on the highest yearly estimated toxic emissions to be tested on test stand(s);
J. Identification of those meteorological conditions under which propellant testing will cause insignificant risk to the nearest receptor;
K. Identification meteorological conditions that were used in the toxic risk an analysis;

VI. Recordkeeping Requirements

Owner or Operator of rocket motor, solid rocket propellant, or any equipment subject to this rule shall maintain records specified in Section VI.A and VI.B for at least five years and shall make those records available to the District upon request.

A. Without a Rocket Test Plan –
   Documentation for all rocket propellant combustion tests subject to Section IV.A shall be kept on-site or at the operator's nearest place of business and shall include the following:
   1. Net mass and type of propellant burned
   2. Wind Direction and Speed
   3. Date and time of test or combustion
   4. Location of test or combustion

B. With a Rocket Test Plan –

Documentation for all rocket propellant combustion tests shall be kept on-site or at the operator's nearest place of business specified in the Rocket Testing Plan and shall include the following:

1. Net mass and type of propellant burned
2. Wind Direction and Speed
3. Date and time of test or combustion
4. Location of test or combustion

VII. Compliance Schedule

A. New Sources

1. Owners or Operators of any rocket test stand capable and intending to test rockets with a propellant mass of 75 lbs or greater and without a valid Permit to Operate (PTO) or an Authority to Construct (ATC) shall apply for an ATC within 90 days from the adoption of this Rule.
2. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule.
3. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District during initial permitting of the rocket test stand. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.

B. Existing Sources

1. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule within 90 days of rule promulgation.
2. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District within 180 days of rule promulgation. The Rocket Test Plan shall be in effect from the date of approval by the APCO. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.
3. Owners or operators with valid PTO(s) shall, within 90 days of rule promulgation, notify the District in writing of PTO(s) subject to this rule.
4. Owners or operators with valid ATC(s) or ATC applications in process shall, within 30 days of rule promulgation, notify the District in writing of ATC(s) or ATC applications subject to this rule.

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PROOF OF PUBLICATION

The BAKERSFIELD CALIFORNIAN
P.O. BOX 440
BAKERSFIELD, CA 93302

KERN COUNTY APCD-LEGALS ONLY
2700 M ST STE 302
BAKERSFIELD, CA 93301

Ad Number:	10201411	**PO #:**	
Edition:	TBC	**Run Times**	1
Class Code	Legal Notices		
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Total Cost	$ 142.62	**Account**	1KCA15
Billing Address	KERN COUNTY APCD-LEGALS ONI 2700 M STSTE 302 BAKERSFIELD,CA 93301		

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STATE OF CALIFORNIA
COUNTY OF KERN

I AM A CITIZEN OF THE UNITED STATES AND A RESIDENT OF THE COUNTY AFORESAID: I AM OVER THE AGE OF EIGHTEEN YEARS, AND NOT A PARTY TO OR INTERESTED IN THE ABOVE ENTITLED MATTER. I AM THE ASSISTANT PRINCIPAL CLERK OF THE PRINTER OF THE BAKERSFIELD CALIFORNIAN, A NEWSPAPER OF GENERAL CIRCULATION, PRINTED AND PUBLISHED DAILY IN THE CITY OF BAKERSFIELD COUNTY OF KERN,

AND WHICH NEWSPAPER HAS BEEN ADJUDGED A NEWSPAPER OF GENERAL CIRCULATION BY THE SUPERIOR COURT OF THE COUNTY OF KERN, STATE OF CALIFORNIA, UNDER DATE OF FEBRUARY 5, 1952, CASE NUMBER 57610; THAT THE NOTICE, OF WHICH THE ANNEXED IS A PRINTED COPY, HAS BEEN PUBLISHED IN EACH REGULAR AND ENTIRE ISSUE OF SAID NEWSPAPER
AND NOT IN ANY SUPPLEMENT THEREOF ON THE FOLLOWING DATES, TO WIT: 2/6/07

ALL IN YEAR 2007

I CERTIFY (OR DECLARE) UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT.

Evelyn Langston

DATED AT BAKERSFIELD CALIFORNIA

2/6/07

Solicitor I.D.: 0

First Text
KERNCOUNTYAIRPOLLUTIONCONTROLDISTRIC

Ad Number 10201411

KERN COUNTY AIR POLLUTION CONTROL DISTRICT
NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTION OF PROPOSED AMENDMENTS TO RULE 431 (PROPELLANT COMBUSTION AND ROCKET TESTING)

NOTICE IS HEREBY GIVEN a public hearing will be held on March 8, 2007, 2:00pm at Ridgecrest City Hall, 100 West California Avenue, Ridgecrest, California. At the hearing the Kern County Air Pollution Control District (District) Board of Directors will consider adoption of the proposed amendments to District Rule 431 (Propellant Combustion and Rocket Testing).

Rule 431 was adopted January 24, 2007. Comments presented during the rule adoption hearing and in a letter received on January 6, 2007 prompted the proposed amendments to Rule 431. The California Air Resources Board and the United States Environmental Protection Agency also reviewed the adopted version of Rule 431. The District is proposing to add exemptions for combustion of propane and liquid oxygen (LOX) ; and methane and LOX. The proposed amendments are considered minor and will not affect the air quality within the District. All comments regarding the proposed amendments will be considered and addressed in the final drafts of the proposed rule amendments and staff report to the Board.

Interested persons may appear at the hearing and make oral comments. Written comments are invited for consideration and should be received by the close of business on March 5, 2007. Correspondence should be addressed to David L. Jones, APCO at KCAPCD, 2700 "M" Street, Suite 302, Bakersfield, CA 93301, (661) 862-5250.

The drafts of the proposed rule amendments and staff report are available for inspection at the District's offices located at 2700 "M" Street, Suite 302, Bakersfield, CA. 93301, (661) 862-5250 and 1775 Highway 58, Mojave, CA. 93501, (661) 824-7085. You may also download a copy from the District's website at www.kernair.org or call Debra at (661) 862-5250 and request a copy.

FEBRUARY 6, 2007 (10201411)

Kern County Air
Pollution Control District

Staff Report

Rule 431

Propellant Combustion and Rocket Testing

Glen Stephens, P.E.
Air Quality Engineer III

February 5, 2007

2700 "M" Street, Suite 302
Bakersfield, California 93301
(661) 862-5250

431 (Propellant Combustion and Rocket Testing)

I. EXECUTIVE SUMMARY

A. Reasons for Rule Development and Implementation

Proposed amendment to Rule 431 originated from comments from industry representatives. Currently, Rule 431, Section III, E exempts rocket propellants comprised primary of liquid fuels as approved by the Air Pollution Control Officer (APCO). Exempt fuels include, but are not limited to the following fuel/oxidizer combinations: kerosene and liquid oxygen (LOX), liquid hydrogen and LOX, isopropyl alcohol and LOX, and nitrogen tetroxide and hydrazine. Industry representatives requested addition of the following fuel/oxidizer combinations:

1) Propane and LOX
2) Methane and LOX.

Based on the benign exhaust of propane/LOX and methane/LOX combustions, District staff has proposed to amend Rule 431 to include propane/LOX and methane/LOX as exempt fuel/oxidizer compounds of Section III, E of Rule 431.

B. Description of Current Rule Amendment

The District is proposing a small amendment to Rule 431 (Propellant Combustion and Rocket Testing). The proposed amendment adds two fuel/oxidizer combinations (propane (C_3H_8)/LOX and Methane (CH_4) /LOX) to the current list of exempt fuels in Rule 431, Section III, E. Combustion of propane (C_3H_8)/LOX and Methane (CH_4) /LOX produce only carbon dioxide (CO_2) and water (H_2O). Additionally, both compounds, when manufactured, only contain trace amounts of sulfur and essentially no toxic air contaminants; therefore, adding the propane/LOX and methane/LOX to the current exemptions will not affect the effectiveness of Rule 431.

C. Correction of Rule Formatting

Staff is including minor corrections to outline format of the Rule.

II. BACKGROUND

Rule 431 was adopted by the District Board (unanimously) January 24, 2007. Proposed amendments will not change the effectiveness of the Rule 431.

III. DISCUSSION

Combustion of propane/LOX and methane/LOX is not expected to affect the District air quality or the District's attainment plans.

IV. RULE DEVELOPMENT PROCESS

Proposed change is minor; therefore, a rule workshop is not warranted. Rule is expected to be adopted by March 8 2007.

V. EMISSION INVENTORY AND POTENTIAL EMISSION REDUCTIONS

Proposed rule is not expected to result in any emission reductions at this time. Proposed amendments should have no effect on air quality.

VI. COST EFFECTIVENESS ANALYSIS

Proposed rules are not expected to significantly increase cost. As most test facilities maintain records of test operations, additional costs for recordkeeping and notification are inconsequential.

VII. ENVIRONMENTAL IMPACTS

No significant environmental impacts are expected as a result of this proposed amendment. Pursuant to the California Environmental Quality Act (CEQA), staff will prepare a Notice of Exemption for this project.

VIII. RULE CONSISTENCY ANALYSIS

Rules do not conflict with other rules or District, ARB, or EPA regulations or any court decisions or statutes.

IX. REFERENCES

1. Staff Report for Rules 404.1 and Rule 431 (see Attachment C)

ATTACHMENT A

Comments

Comment from Randal Clague, XCOR Aerospace (11/16/2006):

> Mr. Clague requested to add methane and liquid oxygen as exempt compounds in Section III of Rule 431.

Comment from Kenneth Doyle, Proto Flight (01/24/2007)

> Mr. Doyle requested to add propane and liquid oxygen as exempt compounds in Section III of Rule 431.

ATTACHMENT B

Rule 431 (Amended)

Strike-Out/Underline Version of Rule 431

Rule 431 Propellant Combustion and Rocket Testing – Adopted 01/24/2007, Amended XX/XX/2007

I. Applicability

Rule 431 shall apply to open-air rocket propellant combustion operations conducted on rocket test stands.

II. Definitions

A. Hybrid Rocket Motor - Rocket type where prior to ignition the oxidizer may be either a liquid or a gas. The solid fuel typically consists of a polymeric rubber grain with a center perforation. The liquid or gas oxidizers are typically supplied to the solid fuel grain via a fuel injection system.
B. Permissible Burn Day - Days designated as permissible burn days by the California Air Resources Board (ARB) based on the meteorological criteria for the Mojave Desert Air Basin at section 80311 of Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.
C. Permitted Test Stand - Any rocket test stand with a valid permit to operate issued by the Kern County Air Pollution Control District (District).
D. Receptor - The closest downwind person not associated with testing or the property fence line, whichever is closest.
E. Rocket - A device consisting of a combustion chamber in which materials referred to as propellants, providing both fuel and oxidizer for combustion, are burned. Products of combustion escape through the nozzle, providing thrust.
F. Rocket Engine - Rocket type where prior to ignition the propellants may be in either in a liquid or gaseous state and are typically supplied via a fuel injection system.
G. Rocket Test Plan - Document specifying designated testing conditions and information as described in Section V.
H. Rocket Test Stand - Any open-air ground-based structure used for testing of rocket propellant combustion or apparatus
I. Solid Rocket Motor - Rocket type where prior to ignition the propellants are in a solid state.

III. Exemptions

The provisions of this Rule shall not apply to:

A. Rocket propellant combustion during rocket test stand operations with a total consumed or combusted propellant mass of 75 lbs. or less.
B. Emergency destruction/disposal of propellant by qualified bomb squad or explosive ordinance disposal groups
C. Combustion of rocket propellants outside of the rocket body for purposes of fire training or for purposes of disposal by combustion under an approved burn plan.
D. Rocket propulsion systems that do not require the combustion of propellants for operation.
E. Rocket propellants comprised primarily of liquid fuels as approved by the District Air Pollution Control Officer (APCO). Exempt liquid fuels include, but not limited to the following:
   1.) RP-1 (kerosene) and liquid oxygen (LOX),
   2.) Liquid hydrogen and LOX,
   3.) Isopropyl alcohol (IPA) and LOX, and
   4.) Propane and LOX,
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IV. General Requirements

A. Without a Rocket Test Plan - Combustion of rocket propellants at a permitted rocket test stand may be conducted without a Rocket Test Plan, if conditions in Sections IV.A.1 and IV.A.2 are met.
   1. Rocket propellant mass must be less than or equal to 500 lbs. for a solid rocket motor or hybrid rocket motor, and less than or equal to 1000 lbs. for a rocket engine.
   2. The ARB has designated the day as a permissible burn day.

B. Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.

C. With a Rocket Test Plan - Combustion of rocket propellants at a permitted test stand may be conducted when there is an APCO approved Rocket Test Plan, if the meteorological conditions in the approved Rocket Test Plan are met, as required in Section V.

V. Rocket Test Plan

The rocket test stand operator shall submit a rocket testing plan to the District every two years for rocket test stand operations, where any individual solid rocket motor or hybrid rocket exceeds a mass of 500 lbs. of propellant, or for any rocket engine that exceeds a mass of 1000 lbs. of propellant. Rocket testing plans must contain, at a minimum, the following information (V.H, V.I, V.J, and V.K are not required if facility has an approved AB2588 Plan):

A. Company name and project name (program name);
B. Identification of responsible personnel, including telephone contacts;
C. Detailed description of testing area including location of test stand(s), size of test area (acres) and plot plan of the site;
D. Maximum number of each rocket type (solid, liquid or hybrid) and amount of propellants to be used each year of the plan;
E. Air quality impact analysis for the rocket with the maximum particulate matter emissions expected to be tested on the test stand(s);
F. Description of monitoring to be conducted during testing; and
G. Description of the minimum record keeping and reporting to be conducted.
H. Identification and location to nearest receptor downwind of the test stand;
I. Toxic risk analysis conducted on the highest yearly estimated toxic emissions to be tested on test stand(s);
J. Identification of those meteorological conditions under which propellant testing will cause insignificant risk to the nearest receptor;
K. Identification meteorological conditions that were used in the toxic risk an analysis;

VI. Recordkeeping Requirements

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1a. Net mass and type of propellant burned
2b. Wind Direction and Speed
3c. Date and time of test or combustion
4d. Location of test or combustion

B. With a Rocket Test Plan –
Documentation for all rocket propellant combustion tests shall be kept on-site or at the operator's nearest place of business specified in the Rocket Testing Plan and shall include the following:
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VII. Compliance Schedule

A. New Sources

1. Owners or Operators of any rocket test stand capable and intending to test rockets with a propellant mass of 75 lbs or greater and without a valid Permit to Operate (PTO) or an Authority to Construct (ATC) shall apply for an ATC within 90 days from the adoption of this Rule.
2. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule.
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B. Existing Sources

1. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule within 90 days of rule promulgation.
2. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District within 180 days of rule promulgation. The Rocket Test Plan shall be in effect from the date of approval by the APCO. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.
3. Owners or operators with valid PTO(s) shall, within 90 days of rule promulgation, notify the District in writing of PTO(s) subject to this rule.
4. Owners or operators with valid ATC(s) or ATC applications in process shall, within 30 days of rule promulgation, notify the District in writing of ATC(s) or ATC applications subject to this rule.

ATTACHMENT C

Original Staff Report for January 24, 2007 Governing Board Meeting for Rule 404.1 and Rule 431

Kern County Air
Pollution Control District

Staff Report

Rules 404.1 and 431

Particulate Matter Concentration

And

Propellant Combustion and Rocket Testing

Glen Stephens, P.E.
Air Quality Engineer III

Revised December 11, 2006

2700 “M” Street, Suite 302
Bakersfield, California 93301
(661) 862-5250

Rules 404.1 (Particulate Matter Concentration) and 431 (Propellant Combustion and Rocket Testing)

I. EXECUTIVE SUMMARY

A. Reasons for Rule Development and Implementation

Particulate matter emissions are a serious concern for Kern County residences and the Kern County Air Pollution Control District (District). The District's Federal classification for PM_{10} (particulate matter with diameter not exceeding 10 microns) and $PM_{2.5}$ (particulate matter with diameter not exceeding 2.5 microns) are the following:

Table 1: Air Quality Attainment Status

	Indian Wells	Cummings Valley & Kern River Valley	Remainder of District & Tehachapi
Federal PM_{10}	Attainment/ Maintenance	Non Attainment (Serious)	Unclassified/ Attainment
Federal $PM_{2.5}$	Unclassified/Attainment		

The District is Non-Attainment for State PM_{10} standards. Therefore, the District will continue develop and maintain rules to ensure the District attains and exceeds ambient air quality standards to allow healthy growth of the community.

District Rule 404.1, originally adopted April 18, 1972, sets forth particulate matter concentration standards of 0.2 grains per cubic foot of gas at standard conditions (gr/scf) for equipment in existence prior to April 18, 1972, and 0.1 gr/scf for equipment installed after the adoption of Rule 404.1. This standard currently applies to all types of equipment including solid propellant combustion. While the 0.1 gr/scf standard may be appropriate for some operations, the 0.2 gr/scf standard should no longer apply to equipment within the District.

Solid propellant combustion operations typically occur less than once a month at a source, and generally last less than a minute. Moreover, solid propellant combustion operations are a class of source that does not fit the constraints of Rule 404.1. Most conventional emission control options cannot be utilized for solid propellant combustion operations because of the high exhaust temperature, backpressure constraints, and exhaust flow rates. Therefore, a new rule will be created specifically for propellant combustion operations to establish procedures and possible control options for solid propellant combustion operations, including rocket test facilities.

B. Description of Current Rule Modification and New Rule

District is proposing to modify Rule 404.1 (Particulate Matter Concentration), to remove the 0.2 gr/scf standard, and remove rocket propellant (including solid propellant) combustion from the requirements of Rule 404.1. Additionally, District is proposing to create a new rule (431, Propellant Combustion and Rocket Testing) to set forth standards for propellant combustion and rocket testing operations. Please note, after initial workshop, Rule 404.2 was renumbered to Rule 431. It was decided, although the reason for developing the new Rule was because of particulate matter emissions, the new rule has a scope broader than particulate matter emissions only. Therefore, Rule 404.2 was renumbered to Rule 431 to be consistent with the District's Rule numbering nomenclature.

II. BACKGROUND

A. Current District Regulations

District Rule 404.1 was initially adopted in April 18, 1972 for the Kern County Air Pollution Control District (that encompassed all of Kern County prior to inception of the San Joaquin Valley Air Pollution Control District that extracted the valley portion of Kern County). Rule 404.1 allowed a maximum particulate matter concentration of 0.2-gr/scf for equipment in existence at time of rule adoption; consequently, equipment installed after 4/18/72 would have to comply with a maximum particulate matter concentration of 0.1-gr/scf.

Currently, the District has no rule specifically for propellant combustion. This class of source has largely gone unnoticed, mainly because of the infrequency of propellant combustion. However, with recent increase in rocket testing (missiles and prototype) operations utilizing solid propellants, this class of source has attained some recognition.

B. State and Federal Regulations

Currently there are no State regulations for exhaust particulate matter concentration (as set forth in Rule 404.1). Additionally, there are no State Regulations for combustion of propellants (as described in Rule 431). Therefore, there are no State regulations that would preclude the adoption of modified Rule 404.1 and Rule 431.

There are several Federal regulations that include exhaust particulate matter concentration requirements, and the District will continue to enforce all Federal regulations. Additionally, Rule 404.1 sets forth the minimum requirement; an operation will be required to comply with the most stringent requirement of any rule, regulation, or additional requirement.

There is a Federal regulation that includes rocket testing, NESHAP Subpart PPPPP (National Emission Standards for Hazardous Air Pollutant for Engine Test Cells/Stands). However, as stated in the Federal Register (Vol. 68, No. 101/Tuesday, May 27, 2003 /Rules and Regulations, Pg. 28779): *"New or reconstructed affected sources used for testing combustion turbine engines or new or reconstructed test cells/stands used for testing rocket engines are not required to comply with the emission limitation or the recordkeeping or reporting requirements in the final rule."* During the rule making process, It was determined there is insufficient technology to control emissions from rocket testing.

C. Other District Rules and Regulations

There are 35 local air pollution control Districts in California. Of the 35 districts, all have rules in regards to particulate matter emissions (similar to Rule 404.1), and two [Ventura County Air Pollution Control District (VCAPCD) and San Diego County Air Pollution Control District (SDAPCD) have rules in regards to rocket firing. Moreover, VCAPCD particulate matter emission rule (Rule 57.1, Particulate Matter Emissions From Fuel Burning Equipment) specifically exempts rocket engine test stands, rocket propellant testing devices, and rocket fuel testing devices. The District is proposing a similar exemption to our particulate matter emission rule. However, the District is proposing a new rule to establish when propellant and rocket testing can be conducted to minimize air quality impacts.

The VCAPCD and SDAPCD rules, in regards to rocket testing, are significantly different. SDAPCD rule sets forth procedures to do air sampling after rocket test or propellant

disposal, and VCAPCD rule provides an exemption for rocket testing. It is important to note other air pollution control districts; in addition to the District, VCAPCD and SDAPCD; have facilities that perform rocket testing. These districts do not apply their PM concentration rules to this class of source. In most of California, rocket testing is a class of source that largely unregulated by specific air emission rules.

D. Technology Growth

The 0.2-gr/scf is currently the maximum emission concentration standard for equipment installed prior to 1972. Equipment and processes installed in 1972 have aged over 33 years. It is reasonable to expect equipment to age and require replacement. Therefore, given technology advancements in fabric collectors, moisture control to minimize particulate matter (PM) emissions, and other PM control methodologies a maximum PM emission concentration of 0.1-gr/scf is attainable for all sources within the District.

The aerospace industry is a growing industry within the District. A few facilities within the District test and utilize propellants for aerospace vehicles (SpaceShipOne, missiles, and etc.). Solid propellants are of four basic types: black powder, double base, composite, and hybrid. Generally, solid propellants have oxidizer and fuel embedded or bound together in a solid compound that is cast into the rocket motor casing; however, in a hybrid rocket, a gaseous or liquid oxidizer is stored in a tank separate from a solid fuel grain. The fuel grain is placed inside a pressure chamber that lies between the oxidizer injector and the exit nozzle. Injecting the oxidizer at a high mass flow rate and pressure into the pressure chamber/combustion port area cause the oxidizer and fuel to react producing propulsion.

In addition to solid propellants, liquid propellants are utilized in the aerospace industry. Propellants utilized during the past 20 years include (but not limited to): RP-1 (a highly refined grade of kerosene) and liquid oxygen (LOX), liquid hydrogen and LOX, and hydrazine (N_2H_4) and nitrogen tetroxide (N_2O_4). For propulsion, fuel (e.g. PR-1) and oxidizer (e.g. LOX) are mixed in a combustion chamber where the oxidizer reacts with fuel (initiated by spark or other method) and exhaust gases pass through a nozzle producing propulsion. Other liquid fuels and oxidizers are being produced; therefore, this technology has show continuous growth.

Although solid rockets have existed (black power type) since the 13th century, the modern solid rockets utilizing double base, composite, and hybrid propellants have existed since the 1950's. However, hybrid type solid rockets have experienced an increased growth since the 1990's.

Solid propellants are different than liquid or gaseous fuel, as they are solids at standard temperature and pressure (STP). Therefore, during combustion of solid propellant, the PM_{10} and $PM_{2.5}$ products of combustion (adjusting to STP, utilizing conventional calculation methods) are solid phase with higher concentration than liquid or gaseous fuel; this results in particulate matter concentration exceeding 0.1 grains per standard cubic feet (gr/scf) at STP. Because of propellant combustion characteristics (high exhaust temperature, backpressure requirements, and high exhaust flow rates) conventional control equipment (fabric collectors, scrubbers, electro static precipitators, etc.) cannot be utilized effectively. Instead of controlling the emissions the District is proposing to minimize the effects of the combustion contaminants. Allowing propellant combustion during a range of meteorological conditions will minimize the effects propellant combustion; thereby, combustion contaminants can be well dispersed, and possible harmful effects will be minimized.

III. DISCUSSION

Particulate matter emissions from rocket propellants are not a significant source of emissions, and a class of source that should not be subject to the constraints of Rule 404.1. Propellant emissions vary based on the mass and type of propellant utilized. However, the District's largest rocket test facility modeled emissions from testing a 688,000-pound solid rocket.

Modeling was based on 12 tests a year and one test per day. The modeling was performed using the most current version of the Open Burn/Open Detonation (OB/OD) Dispersion Model (OBODM, Bjorklund et. al., 2003). PM_{10} emissions calculated were based on the amount of Al_2O_3 (aluminum oxide), in the propellant exhaust. Rocket motor testing is conducted only when wind speed is between 5 and 20 knots (5.8 – 23.0 mph), and wind direction is between 260 and 310 degrees. For comparison the Federal and State Ambient Air quality standards, and the ambient PM_{10} and $PM_{2.5}$ levels are the following:

Table 2: Particulate Matter Standards

	Federal PM_{10}	State PM_{10}	Federal $PM_{2.5}$	State $PM_{2.5}$
24 hours	150-µg/m^3	50-µg/m^3	65-µg/m^3	NA
nnual	50-µg/m^3	20-µg/m^3	15-µg/m^3	12-µg/m^3

Most stringent standard highlighted.

The calculated OBODM Modeling results based on the facility fenceline (approximately 8.5 miles from the source) and background concentration based Mojave monitor site information (site nearest to test facility) are the following:

Table 3: OBODM Modeling Results

	Annual PM_{10}	24-hour PM_{10}	Annual $PM_{2.5}$	24-hour $PM_{2.5}$
OBDOM Model (µg/m^3)	0.117	3.58	0.088	2.70
Background Concentration (µg/m^3)	20	42	6.2	15
Resultant Ambient Concentration (µg/m^3)	20.12	45.58	6.29	17.70

The modeling shows the rocket testing would not cause a change in the District's air quality status; therefore, the emissions would not be significant. Other rocket test facilities utilize smaller sized rocket engines; therefore, the impact from rocket engine testing from the Mojave Airport and other sites would be less significant. For comparison, SpaceShipOne (winner of Ansari X-Prize, launched at tested at the Mojave Airport) propellant size has not been publicized; however, White Knight (vehicle that carried SpaceShipOne to its launch point) has a maximum payload of 8,000 lbs. Therefore, including mass for 3 passengers, avionics, vehicle shell, and etc., propellant mass could not exceed 7000-lbs. The modeling was for a unit 688,000-lbs (approximately 100 times larger). Similarly, the emissions from smaller units would be correspondingly smaller. Therefore, based on completed modeling, the overall impact from all the District's test facilities is not expected to be significant.

Rule 404.1 relies on control equipment to reduce the particulate matter emissions to 0.1-gr/scf or less, when uncontrolled emissions exceed the standard. When control equipment cannot be utilized (as with rocket testing operations) the effectiveness of Rule 404.1 is negated. Moreover, ambient particulate matter concentration includes rocket-testing operations, as solid propellant rocket tests have commenced in the District under experimental research exemptions and permit variances. Also, in addition to the District, VCAPCD and SDAPCD, rocket-testing operations have occurred in other air districts throughout the state. The District is not seeking relax Rule 404.1; the District is seeking to make Rule 404.1 viable to the class of source it is intended. Rule 431 is designed to mitigate the rocket testing emissions by controlling ignition periods. Therefore, an exemption for solid rocket propellants will be added to Rule 404.1. Additionally, a new rule for rocket propellant combustion and rocket test facilities will be created.

A. Summary of Rule 404.1

Section 1. – Applicability

Rule 404.1 applies to any person who discharges particulate matter emissions into the atmosphere from any single source operation.

Section 2. – Exemptions

1. The requirement of this rule shall not apply to the following equipment provided it combusts only liquid fuels, gaseous fuels, or waste gases, and only emits combustion contaminants:
   a. Boilers,
   b. Steam generators,
   c. Water heaters, and
   d. Process heaters.

2. This rule shall not apply to rocket testing operations meeting the requirements or exemptions of Rule 431.

3. The rule shall not apply to fires set in accordance with requirements of Rules 416.

Section 3. – Requirements

Particulate matter emissions shall not exceed 0.1 grains per standard cubic foot of gas at standard conditions (gr/scf).

Section 4. – Test Methods

Requirements of Section 3 shall be determined by in accordance with the following test procedures:

Particulate Matter:	EPA Test Method 5, 5A, 5B, 5D, 5E, 5F, 5G, 5H, or 5i California Air Resources Board (CARB) Method 5, 5A or 5E.

B. Summary of Rule 431

EPA has determined that the Maximum Available Control Technology (MACT) floor (minimum control available) for rocket test cells/stands is “no control.” Additionally, EPA determined that “above-the-floor” controls are currently not appropriate. Therefore, procedures utilized for open combustion will be utilized to mitigate propellant combustion effects. Originally, Rule 431 was developed to exempt solid rocket propellants only; however, based on MACT standards for rocket test cells/stands, the rule will be expanded to include all rocket (solid, liquid, and gaseous) fuels.

Section 1. – Applicability

Rule 431 shall apply to open-air rocket propellant combustion operations conducted on rocket test stands.

Section 2. – Definitions

a. Hybrid Rocket Motor - Rocket type where prior to ignition the oxidizer may be either a liquid or a gas. The solid fuel typically consists of a polymeric rubber grain with a center perforation. The liquid or gas oxidizers are typically supplied to the solid fuel grain via a fuel injection system.
b. Permissible Burn Day - Days designated as permissible burn days by the California Air Resources Board (ARB) based on the meteorological criteria for the Mojave Desert Air Basin at section 80311 of Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.
c. Permitted Test Stand - Any rocket test stand with a valid permit to operate issued by the Kern County Air Pollution Control District.
d. Receptor - The closest downwind person not associated with testing or the property fence line, whichever is closest.
e. Rocket - A device consisting of a combustion chamber in which materials referred to as propellants, providing both fuel and oxidizer for combustion, are burned. Products of combustion escape through the nozzle, providing thrust.
f. Rocket Engine - Rocket type where prior to ignition the propellants may be in either in a liquid or gaseous state and are typically supplied via a fuel injection system.
g. Rocket Test Plan - Document specifying designated testing conditions and information as described in Section V.
h. Rocket Test Stand - Any open-air ground-based structure used for testing of rocket propellant combustion or apparatus.
i. Solid Rocket Motor - Rocket type where prior to ignition the propellants are in a solid state.

Section 3. – Exemptions

The provisions of this Rule shall not apply to:

a. Rocket propellant combustion during rocket test stand operations with a total propellant mass of 75 lbs. or less.
b. Emergency destruction/disposal of propellant by qualified bomb squad or explosive ordinance disposal groups
c. Combustion of rocket propellants outside of the rocket body for purposes of fire training or for purposes of disposal by combustion under an approved burn plan.
d. Rocket propulsion systems that do not require the combustion of propellants for operation.
e. Rocket propellants comprised primarily of liquid fuels as approved by the District Air Pollution Control Officer. Exempt liquid fuels include, but not limited to the following:
    1) RP-1 (kerosene) and liquid oxygen (LOX),
    2) Liquid hydrogen and LOX,
    3) Isopropyl alcohol (IPA) and LOX, and
    4) Nitrogen tetroxide and hydrazine.

Section 4. – General Requirements

A. Without a Rocket Test Plan - Combustion of rocket propellants at a permitted rocket test stand may be conducted without a Rocket Test Plan, if conditions in Sections IV.A.1 and IV.A.2 are met.

1. Rocket propellant mass must be less than or equal to 500 lbs. for a solid rocket motor or hybrid rocket motor, and less than or equal to 1000 lbs. for a rocket engine.
2. The ARB has designated the day as a permissible burn day.

B. Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.

C. With a Rocket Test Plan - Combustion of rocket propellants at a permitted test stand may be conducted when there is an APCO approved Rocket Test Plan, if the meteorological conditions in the approved Rocket Test Plan are met, as required in Section V.

Section 5 – Rocket Test Plan

The rocket test stand operator shall submit a rocket testing plan to the District every two years for rocket test stand operations, where any individual solid rocket motor or hybrid rocket exceeds a mass of 500 lbs. of propellant, or for any rocket engine that exceeds a mass of 1000 lbs. of propellant. Rocket testing plans must contain, at a minimum, the following information (V(H), V(I), V(J), and V(K) are not required if facility has an approved AB2588 Plan):

A. Company name and project name (program name);
B. Identification of responsible personnel, including telephone contacts;
C. Detailed description of testing area including location of test stand(s), size of test area (acres) and plot plan of the site;
D. Maximum number of each rocket type (solid, liquid or hybrid) and amount of propellants to be used each year of the plan;
E. Air quality impact analysis for the rocket with the maximum particulate matter emissions expected to be tested on the test stand(s);
F. Description of monitoring to be conducted during testing; and
G. Description of the minimum record keeping and reporting to be conducted.
H. Identification and location to nearest receptor downwind of the test stand;
I. Toxic risk analysis conducted on the highest yearly estimated toxic emissions to be tested on test stand(s);
J. Identification of those meteorological conditions under which propellant testing will cause insignificant risk to the nearest receptor;
K. Identification meteorological conditions that were used in the toxic risk an analysis;

Section 6. – Recordkeeping Requirements

Owner or Operator of rocket engine or solid propellant shall maintain records specified in Section VI.A and VI.B for at least five years and shall make those records available to the District upon request.

A. Without a Rocket Test Plan –
   Documentation for all rocket propellant combustion tests subject to Section IV.A shall be kept on-site or at the operator's nearest place of business and shall include the following:
   a. Net mass and type of propellant burned
   b. Wind Direction and Speed
   c. Date and time of test or combustion
   d. Location of test or combustion

B. With a Rocket Test Plan –
Documentation for all rocket propellant combustion tests shall be kept on-site or at the operator's nearest place of business specified in the Rocket Testing Plan and shall include the following:
a. Net mass and type of propellant burned
b. Wind Direction and Speed
c. Date and time of test or combustion
d. Location of test or combustion
e. Location of nearest receptor, if different than in the approved Rocket Test Plan

Section 7. – Compliance Schedule

A. New Sources

1. Owners or Operators of any rocket test stand capable and intending to test rockets with a propellant mass of 75 lbs or greater and without a valid Permit to Operate (PTO) or an Authority to Construct (ATC) shall apply for an ATC within 90 days from the adoption of this Rule.
2. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule.
3. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District during initial permitting of the rocket test stand. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.

B. Existing Sources

1. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule within 90 days of rule promulgation.
2. After Submittal of a Rocket Test Plan – After submittal and before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.
3 Owners or operators with valid PTO(s) shall, within 90 days of rule promulgation, notify the District in writing of PTO(s) subject to this rule.
4. Owners or operators with valid ATC(s) or ATC applications in process shall, within 30 days of rule promulgation, notify the District in writing of ATC(s) or ATC applications subject to this rule.

C. District Implementation of Rules 404.1 and 431

Complete applications and notifications submitted to the District in a timely manner shall be deemed in compliance with the requirements of Rule 404.1 and 431 until District makes final determination or issues revised PTO(s).

D. Comments to Rules 404.1 and 431

The United States Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) made comments regarding Rule 404.1 and 431. EPA and ARB comments are included in Attachment A. Additionally, the general public and effected

sources presented comments to draft Rule 404.1 and proposed Rule 431. Some of those who commented regarding draft Rule 404.1 and proposed Rule 431 wanted to remain anonymous; therefore, non-public agency comments will not be included. However, most of the comments presented were utilized to generate the current draft Rule 404.1 and Rule 431.

Several comments were presented by non-public agency personnel after the initial workshop on February 28, 2006. Many of these comments were incorporated into Version 2 of the draft and proposed rules submitted to ARB August 14, 2006. ARB comments (received August 29, 2006) were incorporated into Version 2 of the draft and proposed rules (Version 2a because changes to Version 2 were minor) that were utilized for the November 16, 2006 (2nd) workshop. Additionally, Version 2a of the draft and proposed rules were submitted to EPA for comment November 10, 2006.

The workshop held November 16, 2006 and subsequent comments received from EPA November 20, 2006 inspired Version 3 of the draft and proposed rules. The Version 3 of Rule 404.1, in response from EPA comments, will remove gas turbine engines, internal combustion engines, space heaters, and flares from the exemptions section of Rule 404.1. Other equipments listed are covered by other rules boilers, steam generators, water heaters, and process heaters are covered by Rule 409, rocket testing is to be covered by Rule 431, and open burning is covered by Rule 416.

Version 3 of Rule 431 includes changes prompted by comments for the public and effected sources. One comment, by an effected source, noted Section IV(B) does not explicitly allow operation without a test plan during the 180-day time period in which a test plan is to be submitted. The District addressed this problem with the following wording in Section IV:

> *Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.*

The APCO shall deem a test plan complete or incomplete within 30 days of test plan submittal (similar to an Authority to Construct application submittal). The intent is to have the permittee submit the plan early, and have the District review the submittal within the "180-day window." This change will allow the full implementation of Rule 431 within 180-days after rule adoption. Other changes were more cosmetic in nature and do not effect the content of the rule. These changes ware to increase the clarity of the rule; to avoid rule misinterpretations.

IV. RULE DEVELOPMENT PROCESS

An initial workshop was completed during February 2006. Rules are expected to be adopted by January 2007. Specifically:

January 2006	Completion of Draft Rules 401.1 and 431, and completion of Rule Development Staff Report
February 2006	Staff Report for Draft Rules 401.1 and 431 distributed to California Air Resources Board (ARB) and the United States Environmental Protection Agency (EPA) for comments. Begin rule workshop process.

March 2006	Continue workshop process.
April 2006	Expect comments from ARB and EPA.
November 1, 2006	**Public Notice of Draft Rule 404.1 and Proposed Rule 431**
November 16, 2006	**2nd Workshop for Draft Rule 404.1 and Proposed Rule 431**
December 5, 2006	Final day comments for rules can be received for consideration before rule is posted for adoption
January 11, 2007	**Draft Rule 404.1 and Proposed Rule 431 to be adopted**
April 2007	or 90 days from January adoption of Rule 431, existing sources are to be in full compliance with Rule 431

V. EMISSION INVENTORY AND POTENTIAL EMISSION REDUCTIONS

Each proposed rule is not expected to result in any emission reductions at this time. However, the impacts of emissions are to be minimized by the implementation of this rule. The rule requires solid propellant ignition only during meteorological conditions that will mitigate fuel combustion pollutants. The rule modification and addition are currently designed to allow safe operation of rocket engine test stands and provide reasonable mitigation.

VI. COST EFFECTIVENESS ANALYSIS

Proposed rules are not expected to significantly increase cost. As most test facilities maintain records of test operations, additional costs for recordkeeping and notification are inconsequential.

VII. ENVIRONMENTAL IMPACTS

No significant environmental impacts are expected as a result of this proposed amendment. Pursuant to the California Environmental Quality Act (CEQA), staff will prepare a Notice of Exemption for this project.

VIII. RULE CONSISTENCY ANALYSIS

Rules do not conflict with other rules or District, ARB, or EPA regulations or any court decisions or statutes.

IX. REFERENCES

1. 40 CFR Part 63 (Subpart PPPPP), National Emission Standards for Hazardous Air Pollutants: Engine Test Cells/Stands (63.9280 through 63.9375) (http://www.epa.gov/epacfr40/chapt-I.info/chi-toc.htm)

2. California Air Resources Board District Rule Database (http://www.arb.ca.gov/drdb/drdbltxt.htm)

3. Minutes of Teleconference Between EPA and Representatives from Rocket Engine Test Firing and Engine Test Facilities, April 9, 1998

ATTACHMENT A

Comments

Comments from the Air Resources Board (ARB)

STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
AIR RESOURCES BOARD

P. O. Box 2815
Sacramento, California 95812

August 29, 2006

Transmittal
of
ARB Staff Rule Review Comments

To: Mr. David L. Jones
Air Pollution Control Officer
Kern County Air Pollution Control District
Telephone Number: (661) 862-5250
e-mail: kcapcd@co.kern.ca.us

From: Dave Brown, (916) 324-1129
e-mail: dabrown@arb.ca.gov

The following draft rules, which are scheduled for a public workshop to be held by your district staff on August 30, 2006, were received by us on August 14, 2006, for our review:

Rule 404.1	Particulate Matter Concentration (for amendment)
Rule 431	Solid Propellant Combustion and Rocket Testing (new rule)

We have reviewed the rules and have the comments on Rule 404.1 on the following page. Based on the information available to us at this time, we have no comments on Rule 431.

If you have any questions about our comments, please contact Ms. Sylvia Morrow, Manager of the Particulate Matter Analysis Section, Air Quality Data Branch, Planning and Technical Support Division, at (916) 324-7163.

Date: August 29, 2006

Air Resources Board Staff Comment on
Kern County Air Pollution Control District
Draft Rule 404.1

Rule 404.1 Particulate Matter Concentration (for amendment)

1. Section I: Section I states that, "Rule 404.1 applies to any person who discharges into the atmosphere from any single source operation particulate matter emissions." For clarity, we recommend that the District rephrase this sentence to read, "Rule 404.1 applies to any person who discharges particulate matter emissions into the atmosphere from any single source operation."

2. Section II. 1: Section II. 1 states, "The requirement of this rule shall not apply to the following equipment provided it combusts only liquid fuels, gaseous fuels, or waste gases, and only emits only combustion contaminants:" For clarification, we recommend that the District delete the third use of the word "only."

3. Section II. 2: The reference to Rule 404.2 should be changed to Rule 431.

Comments from the United States Environmental Protection Agency (EPA)

Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

November 20, 2006

Transmittal of EPA Rule Review Comments

To: David Jones , Kern County Air Pollution Control District
kcapcd@co.kern.ca.us

Mike Guzzetta, California Air Resources Board
mguzzett@arb.ca.gov

From: Andrew Steckel, Rulemaking Office Chief
steckel.andrew@epa.gov

Re: Kern County APCD Rules 404.1, Particulate Matter Concentration, and 431, Propellant Combustion and Rocket Testing, drafts dated October 16, 2006

We are providing comments based on our preliminary review of the draft rules identified above. The proposed revisions strengthen Rule 404.1 by removing the 0.2 gr/scf PM-10 emission standard for certain old sources and requiring that all sources, except exempted sources, comply with the 0.1-gr/scf PM-10 emission standard. The new Rule 431 allows rocket testing when environmental impacts are minimized since there is insufficient technology for controlling emissions from rocket testing. Please direct any questions about our comments to me at (415) 947-4115 or to Alfred Petersen at (415) 947-4118.

404.1.II.1: This paragraph adds new exemptions to Rule 404.1 that appear inconsistent with Rule 202, Permit Exemptions. Rule 202 exempts from permitting boilers, steam generators, water heaters, and process heaters with less than 5,000,000 Btu/hr input and exempts from permitting gas turbines with less than 3,000,000 Btu/hr input. Sources larger than these thresholds may require a permit, but exempting these sources from Rule 404.1 would leave them without a PM-10 emission standard on which to base the permit.

Mr. Steckel:

Thank you for your comments regarding draft Rule 404.1 and proposed Rule 431. Your comments were received and understood. However, we do not agree with the assessment: that the proposed exemptions in Rule 404.1 are inconsistent with Rule 202 (Permit Exemptions) and there would be no PM-10 standard for the equipment listed in the exemption. There are two main reasons we believe the exemptions are consistent with Rule 202 and PM-10 emissions standards will not change because of the proposed exemptions:

1) Given stoichiometric combustion of liquid or gaseous fuel in an external combustion (boiler, steam generator, or process heater) or internal combustion (internal combustion engine or gas turbine) emission unit, particulate matter emissions will always be less than 0.1 grains per standard cubic feet. This exemption is similar to exemptions found in South Coast AQMD Rule 404 (see attached r404.pdf,(c)), Ventura County APCD Rule 52 (see attached R52.pdf, B.2), and Mojave Desert AQMD Rule 404 (see attached 404.pdf, (b))

2) Exemption in Rule 404.1 does not exempt listed equipment from permitting. New equipment will be required to obtain permit in accordance with Rule 210.1, requiring assessment of criteria (PM-10, SOx, NOx, VOC, and CO) air contaminant emissions. PM-10 emissions are required to be calculated for all new and modified emissions units.

Therefore, because of the above reasons, we believe Exemptions in Rule 404.1 are not inconsistent with Rule 202, and exempting these sources from Rule 404.1 will not leave them without a PM-10 emissions standard on which to base a permit.

Glen Stephens, P.E.
Kern County Air Pollution Control District
Phone: (661) 862-8687
FAX: (661) 862-5251

ATTACHMENT B

Rule 401.1 (Amended)

Strike-Out/Underline Version of Rule 404.1

Rule 404.1 Particulate Matter Concentration ~~– Desert Basin~~ – Adopted 4/18/72, Amended XX/XX/2007

I. ~~A person shall not discharge into the atmosphere from any single source operation, in service on the date this Rule is adopted, particulate matter in excess of 0.2 grains per cubic foot of gas at standard conditions.~~

Applicability

Rule 404.1 applies to any person who discharges particulate matter emissions into the atmosphere from any single source operation.

II. ~~A person shall not discharge into the atmosphere from any single source operation, the construction or modification of which commenced after the adoption of this Rule, particulate matter in excess of 0.1 grains per cubic foot of gas at standard conditions.~~

Exemptions

1. The requirement of this rule shall not apply to the following equipment provided it combusts only liquid fuels, gaseous fuels, or waste gases, and only emits only combustion contaminants:
   a. Boilers,
   b. Steam generators,
   c. Water heaters, and
   d. Process heaters,

2. This rule shall not apply to rocket testing operations meeting the requirements or exemptions of Rule 431.

3. The rule shall not apply to fires set in accordance with requirements of Rules 416.

IV. Requirements

Particulate matter emissions shall not exceed 0.1 grains per standard cubic food of gas at standard conditions (gr/scf).

V. Test Methods

Requirements of Section 3 shall be determined by in accordance with the following test procedures:

Particulate Matter: EPA Test Method 5, 5A, 5B, 5D, 5E, 5F, 5G, 5H, or 5i
California Air Resources Board (CARB) Method 5, 5A or 5E.

(Amended Rule 404.1)

Rule 404.1 Particulate Matter Concentration – Adopted 4/18/72, Amended XX/XX/2007

I. Applicability

Rule 404.1 applies to any person who discharges particulate matter emissions into the atmosphere from any single source operation.

II. Exemptions

1. The requirement of this rule shall not apply to the following equipment provided it combusts only liquid fuels, gaseous fuels, or waste gases, and only emits combustion contaminants:
   a. Boilers,
   b. Steam generators,
   c. Water heaters,
   d. Process heaters, and

2. This rule shall not apply to rocket testing operations meeting the requirements or exemptions of Rule 431.

3. The rule shall not apply to fires set in accordance with requirements of Rules 416.

III. Requirements

Particulate matter emissions shall not exceed 0.1 grains per standard cubic foot of gas at standard conditions (gr/scf).

IV. Test Methods

Requirements of Section 3 shall be determined by in accordance with the following test procedures:

Particulate Matter: EPA Test Method 5, 5A, 5B, 5D, 5E, 5F, 5G, 5H, or 5i
California Air Resources Board (CARB) Method 5, 5A or 5E.

ATTACHMENT C

Rule 431 (New)

Rule 431 Propellant Combustion and Rocket Testing – Adopted XX/XX/2007

I. Applicability

Rule 431 shall apply to open-air rocket propellant combustion operations conducted on rocket test stands.

II. Definitions

A. Hybrid Rocket Motor - Rocket type where prior to ignition the oxidizer may be either a liquid or a gas. The solid fuel typically consists of a polymeric rubber grain with a center perforation. The liquid or gas oxidizers are typically supplied to the solid fuel grain via a fuel injection system.

B. Permissible Burn Day - Days designated as permissible burn days by the California Air Resources Board (ARB) based on the meteorological criteria for the Mojave Desert Air Basin at section 80311 of Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.

C. Permitted Test Stand - Any rocket test stand with a valid permit to operate issued by the Kern County Air Pollution Control District (District).

D. Receptor - The closest downwind person not associated with testing or the property fence line, whichever is closest.

E. Rocket - A device consisting of a combustion chamber in which materials referred to as propellants, providing both fuel and oxidizer for combustion, are burned. Products of combustion escape through the nozzle, providing thrust.

F. Rocket Engine - Rocket type where prior to ignition the propellants may be in either in a liquid or gaseous state and are typically supplied via a fuel injection system.

G. Rocket Test Plan - Document specifying designated testing conditions and information as described in Section V.

H. Rocket Test Stand - Any open-air ground-based structure used for testing of rocket propellant combustion or apparatus

I. Solid Rocket Motor - Rocket type where prior to ignition the propellants are in a solid state.

III. Exemptions

The provisions of this Rule shall not apply to:

A. Rocket propellant combustion during rocket test stand operations with a total consumed or combusted propellant mass of 75 lbs. or less.

B. Emergency destruction/disposal of propellant by qualified bomb squad or explosive ordinance disposal groups

C. Combustion of rocket propellants outside of the rocket body for purposes of fire training or for purposes of disposal by combustion under an approved burn plan.

D. Rocket propulsion systems that do not require the combustion of propellants for operation.

E. Rocket propellants comprised primarily of liquid fuels as approved by the District Air Pollution Control Officer (APCO). Exempt liquid fuels include, but not limited to the following:

1) RP-1 (kerosene) and liquid oxygen (LOX),
2) Liquid hydrogen and LOX,
3) Isopropyl alcohol (IPA) and LOX, and
4) Nitrogen tetroxide and hydrazine.

IV. General Requirements

A. Without a Rocket Test Plan - Combustion of rocket propellants at a permitted rocket test stand may be conducted without a Rocket Test Plan, if conditions in Sections IV.A.1 and IV.A.2 are met.
   1. Rocket propellant mass must be less than or equal to 500 lbs. for a solid rocket motor or hybrid rocket motor, and less than or equal to 1000 lbs. for a rocket engine.
   2. The ARB has designated the day as a permissible burn day.

B. Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.

C. With a Rocket Test Plan - Combustion of rocket propellants at a permitted test stand may be conducted when there is an APCO approved Rocket Test Plan, if the meteorological conditions in the approved Rocket Test Plan are met, as required in Section V.

V. Rocket Test Plan

The rocket test stand operator shall submit a rocket testing plan to the District every two years for rocket test stand operations, where any individual solid rocket motor or hybrid rocket exceeds a mass of 500 lbs. of propellant, or for any rocket engine that exceeds a mass of 1000 lbs. of propellant. Rocket testing plans must contain, at a minimum, the following information (this information can be substituted by an approved AB2588 Plan):

A. Company name and project name;
B. Identification of responsible personnel, including telephone contacts;
C. Detailed description of testing area including location of test stand(s), size of test area (acres) and plot plan of the site;
D. Maximum number of each rocket type (solid, liquid or hybrid) and amount of propellants to be used each year of the plan;
E. Air quality impact analysis for the rocket with the maximum particulate matter emissions expected to be tested on the test stand(s);
F. Description of monitoring to be conducted during testing; and
G. Description of the minimum record keeping and reporting to be conducted.
H. Identification and location to nearest receptor downwind of the test stand;
I. Toxic risk analysis conducted on the highest yearly estimated toxic emissions to be tested on test stand(s);
J. Identification of those meteorological conditions under which propellant testing will cause insignificant risk to the nearest receptor;
K. Identification meteorological conditions that were used in the toxic risk an analysis;

VI. Recordkeeping Requirements

Owner or Operator of rocket motor, solid rocket propellant, or any equipment subject to this rule shall maintain records specified in Section VI.A and VI.B for at least five years and shall make those records available to the District upon request.

A. Without a Rocket Test Plan –
Documentation for all rocket propellant combustion tests subject to Section IV.A shall be kept on-site or at the operator's nearest place of business and shall include the following:
   a. Net mass and type of propellant burned
   b. Wind Direction and Speed
   c. Date and time of test or combustion
   d. Location of test or combustion

B. With a Rocket Test Plan –
Documentation for all rocket propellant combustion tests shall be kept on-site or at the operator's nearest place of business specified in the Rocket Testing Plan and shall include the following:
   a. Net mass and type of propellant burned
   b. Wind Direction and Speed
   c. Date and time of test or combustion
   d. Location of test or combustion

VII. Compliance Schedule

A. New Sources

1. Owners or Operators of any rocket test stand capable and intending to test rockets with a propellant mass of 75 lbs or greater and without a valid Permit to Operate (PTO) or an Authority to Construct (ATC) shall apply for an ATC within 90 days from the adoption of this Rule.
2. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule.
3. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District during initial permitting of the rocket test stand. The Rocket Test Plan shall be updated every two years or as necessary to document changes in test procedure prior to enacting said changes.

B. Existing Sources

1. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule within 90 days of rule promulgation.
2. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District within 180 days of rule promulgation. The Rocket Test Plan shall be in effect from the date of approval by the APCO. The Rocket Test Plan shall be updated every two years or as necessary to document changes in test procedure prior to enacting said changes.
3 Owners or operators with valid PTO(s) shall, within 90 days of rule promulgation, notify the District in writing of PTO(s) subject to this rule.
4. Owners or operators with valid ATC(s) or ATC applications in process shall, within 30 days of rule promulgation, notify the District in writing of ATC(s) or ATC applications subject to this rule.

Comment from Randal Clague, XCOR Aerospace (11/16/2006):

Mr. Clague requested to add methane and liquid oxygen as exempt compounds in Section III of Rule 431.

Comment from Kenneth Doyle, Proto Flight (01/24/2007)

Mr. Doyle requested to add propane and liquid oxygen as exempt compounds in Section III of Rule 431.

Rule 431 Propellant Combustion and Rocket Testing – Adopted 01/24/2007

I. Applicability

Rule 431 shall apply to open-air rocket propellant combustion operations conducted on rocket test stands.

II. Definitions

A. Hybrid Rocket Motor - Rocket type where prior to ignition the oxidizer may be either a liquid or a gas. The solid fuel typically consists of a polymeric rubber grain with a center perforation. The liquid or gas oxidizers are typically supplied to the solid fuel grain via a fuel injection system.

B. Permissible Burn Day - Days designated as permissible burn days by the California Air Resources Board (ARB) based on the meteorological criteria for the Mojave Desert Air Basin at section 80311 of Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.

C. Permitted Test Stand - Any rocket test stand with a valid permit to operate issued by the Kern County Air Pollution Control District (District).

D. Receptor - The closest downwind person not associated with testing or the property fence line, whichever is closest.

E. Rocket - A device consisting of a combustion chamber in which materials referred to as propellants, providing both fuel and oxidizer for combustion, are burned. Products of combustion escape through the nozzle, providing thrust.

F. Rocket Engine - Rocket type where prior to ignition the propellants may be in either in a liquid or gaseous state and are typically supplied via a fuel injection system.

G. Rocket Test Plan - Document specifying designated testing conditions and information as described in Section V.

H. Rocket Test Stand - Any open-air ground-based structure used for testing of rocket propellant combustion or apparatus

I. Solid Rocket Motor - Rocket type where prior to ignition the propellants are in a solid state.

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C. Combustion of rocket propellants outside of the rocket body for purposes of fire training or for purposes of disposal by combustion under an approved burn plan.

D. Rocket propulsion systems that do not require the combustion of propellants for operation.

E. Rocket propellants comprised primarily of liquid fuels as approved by the District Air Pollution Control Officer (APCO). Exempt liquid fuels include, but not limited to the following:

1) RP-1 (kerosene) and liquid oxygen (LOX),
2) Liquid hydrogen and LOX,
3) Isopropyl alcohol (IPA) and LOX, and
4) Nitrogen tetroxide and hydrazine.

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A. Without a Rocket Test Plan - Combustion of rocket propellants at a permitted rocket test stand may be conducted without a Rocket Test Plan, if conditions in Sections IV.A.1 and IV.A.2 are met.
   1. Rocket propellant mass must be less than or equal to 500 lbs. for a solid rocket motor or hybrid rocket motor, and less than or equal to 1000 lbs. for a rocket engine.
   2. The ARB has designated the day as a permissible burn day.

B. Prior to Approval of a Rocket Test Plan – before APCO approval of Rocket Test Plan, combustion of rocket propellants at a permitted test stand may be conducted in accordance with rules, regulations, and policies in effect before the adoption of this rule for up to 180 days after rule promulgation, or until approval or disapproval of submitted plan, which ever is sooner.

C. With a Rocket Test Plan - Combustion of rocket propellants at a permitted test stand may be conducted when there is an APCO approved Rocket Test Plan, if the meteorological conditions in the approved Rocket Test Plan are met, as required in Section V.

V. Rocket Test Plan

The rocket test stand operator shall submit a rocket testing plan to the District every two years for rocket test stand operations, where any individual solid rocket motor or hybrid rocket exceeds a mass of 500 lbs. of propellant, or for any rocket engine that exceeds a mass of 1000 lbs. of propellant. Rocket testing plans must contain, at a minimum, the following information (V.H, V.I, V.J, and V.K are not required if facility has an approved AB2588 Plan):

A. Company name and project name (program name);
B. Identification of responsible personnel, including telephone contacts;
C. Detailed description of testing area including location of test stand(s), size of test area (acres) and plot plan of the site;
D. Maximum number of each rocket type (solid, liquid or hybrid) and amount of propellants to be used each year of the plan;
E. Air quality impact analysis for the rocket with the maximum particulate matter emissions expected to be tested on the test stand(s);
F. Description of monitoring to be conducted during testing; and
G. Description of the minimum record keeping and reporting to be conducted.
H. Identification and location to nearest receptor downwind of the test stand;
I. Toxic risk analysis conducted on the highest yearly estimated toxic emissions to be tested on test stand(s);
J. Identification of those meteorological conditions under which propellant testing will cause insignificant risk to the nearest receptor;
K. Identification meteorological conditions that were used in the toxic risk an analysis;

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   a. Net mass and type of propellant burned
   b. Wind Direction and Speed
   c. Date and time of test or combustion
   d. Location of test or combustion

B. With a Rocket Test Plan –
Documentation for all rocket propellant combustion tests shall be kept on-site or at the operator's nearest place of business specified in the Rocket Testing Plan and shall include the following:
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   b. Wind Direction and Speed
   c. Date and time of test or combustion
   d. Location of test or combustion

VII. Compliance Schedule

A. New Sources

1. Owners or Operators of any rocket test stand capable and intending to test rockets with a propellant mass of 75 lbs or greater and without a valid Permit to Operate (PTO) or an Authority to Construct (ATC) shall apply for an ATC within 90 days from the adoption of this Rule.
2. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule.
3. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District during initial permitting of the rocket test stand. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.

B. Existing Sources

1. Owners or Operators that are not required to comply with Section IV.B and choosing to operate without a Rocket Test Plan shall comply with the guidelines under Section IV.A of this Rule within 90 days of rule promulgation.
2. Owners or Operators intending to operate with a Rocket Test Plan shall submit a Rocket Test Plan to the District within 180 days of rule promulgation. The Rocket Test Plan shall be in effect from the date of approval by the APCO. The Rocket Test Plan shall be updated every two years, or Test Plan shall be updated as necessary to document changes in test procedure prior to enacting said changes, or District shall be notified every two years there have been not any changes to Rocket Test Plan.

3 Owners or operators with valid PTO(s) shall, within 90 days of rule promulgation, notify the District in writing of PTO(s) subject to this rule.

4. Owners or operators with valid ATC(s) or ATC applications in process shall, within 30 days of rule promulgation, notify the District in writing of ATC(s) or ATC applications subject to this rule.

KERN COUNTY AIR POLLUTION CONTROL DISTRICT
DAVID L. JONES, APCO

March 23, 2007

Mr. Dave Brown
California Air Resources Board
Stationary Source Division
PO Box 2815
Sacramento, CA 95815

Dear Mr. Brown:

Enclosed is the Rule Action Package for amended Rule 431, Propellant Combustion and Rocket Testing, (Rule 431) which was adopted by our Board of Directors on March 8, 2007. We request that the California Air Resources Board (ARB) send all the appropriate documentation of Rule 431 to the U.S. Environmental Protection Agency (EPA) as revisions to the State Implementation Plan (SIP) and update the ARB District Rule database of Rules and Regulations on our Website: www.kernair.org .

Included in the Rule Action Package are the following attachments:

1) ARB Rule Evaluation Form
2) SIP Completeness Checklist
3) EPA SIP Approvability Checklist - Enforceability
4) Complete Clean Copy of the Rule
5) Underline and Strikeout Copy of the Rule
6) Copy of Referenced Rule
7) Governing Board Resolution
8) Evidence of Public Hearing
9) Public Comments and Responses
10) Other Materials (Final Report, Evaluation Checklist)

If you or your staff has any questions regarding this matter, please contact Glen Stephens, P.E., and Air Quality Engineer III at (661) 862-5250.

Sincerely,

David L. Jones
Air Pollution Control Officer

DJ: GS: dg
Enclosures

***Bakersfield Office**: 2700 "M" Street, Suite 302, Bakersfield, CA 93301-2370*
Phone (661) 862-5250 – Fax (661) 862-5251
www.kernair.org – kcapcd@co.kern.ca.us
***Mojave Office**: 1775 Highway 58, Mojave, CA 93501-1945 – Phone (661) 824-7085*